



**City of Eureka  
Transportation  
Safety Action  
Plan**

August

**2015**

# **City of Eureka**

## **Transportation Safety Action Plan**

**The Mission of the Transportation Safety Action Plan is  
to make Eureka safe for all modes of transportation.**



Developed in partnership with the City of Eureka Engineering, Public Works, Fire and Police Departments, Eureka City Council, and the City of Eureka Transportation Safety Commission.

## INTRODUCTION

The purpose of this Transportation Safety Action Plan (TSAP) is to improve safety for all modes of transportation in the City of Eureka. To achieve this, we are focusing on two goals: **collision reduction** and **quality of life preservation**. Our collision reduction goal is reasonable and attainable, our areas of emphasis are data supported, our strategies are defensible, and our results will be monitored to ensure continuing success.

The preservation of our quality of life is a separate goal of this plan whose objective is maintaining calm neighborhood traffic. This section identifies traffic calming measures by function, providing a matrix for addressing neighborhood concerns. Requests for reviews of this type will be heard through the Transportation Safety Commission public forum.

The process for achieving our goal of improving transportation safety is illustrated in the TSAP Flow Chart, Appendix A1.

## GOAL 1: REDUCE COLLISIONS

### OBJECTIVE 1: Implement Collision Reduction Strategies

#### IDENTIFY AREAS OF CONCERN

The City selected their emphasis areas after receiving public input at Transportation Safety Commission meetings, meeting with the Eureka Police Department, and reviewing 5 years of collision data collected between 2010 through 2014.

**COLLISION DATA** (The source of these statistics is the City of Eureka CROSSROADS program whose database is administered by the Eureka Police Department, EPD.)

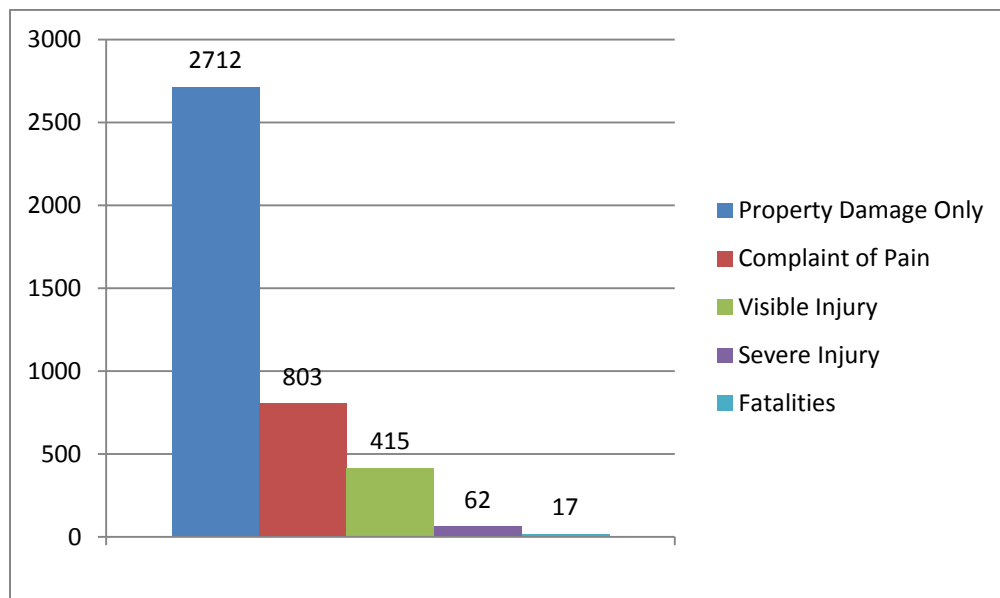
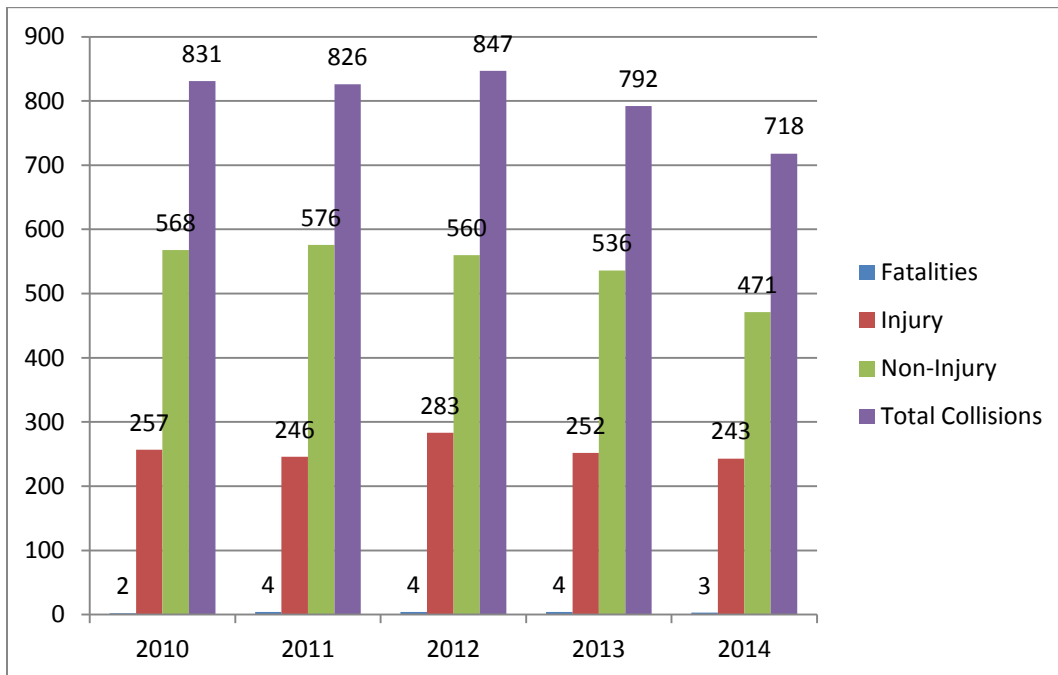


Figure 1: Collisions by Severity

As shown in Figure 1, collisions within the City of Eureka from 2010 through 2014 included:

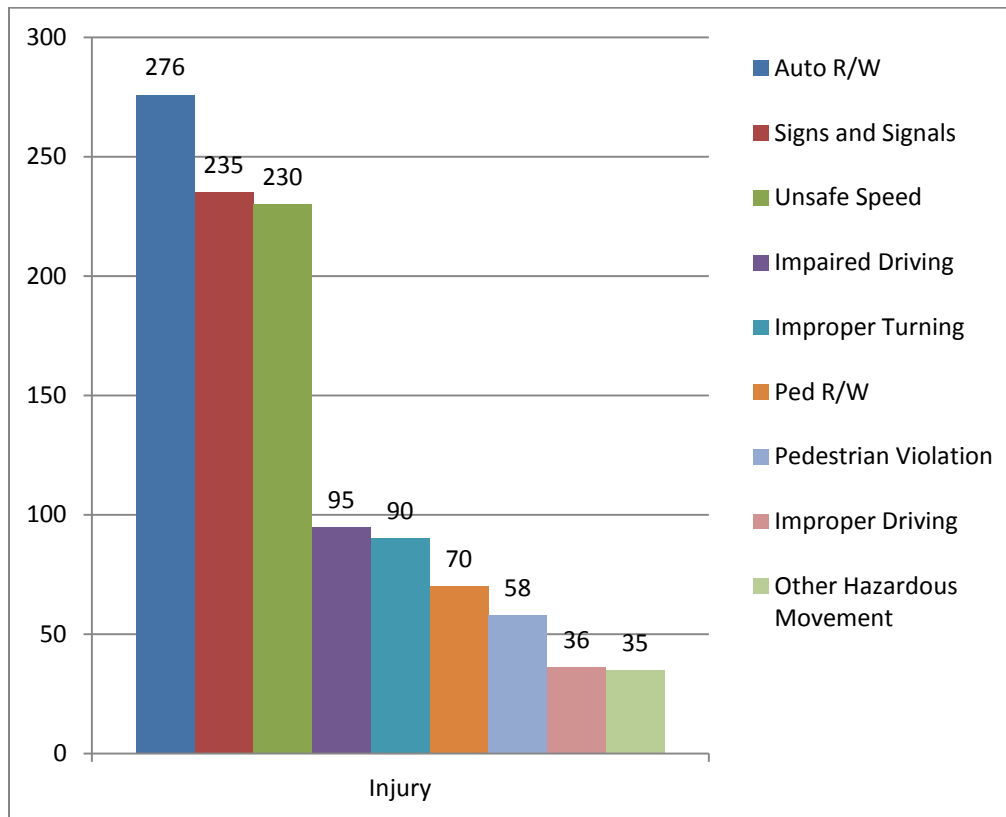
- 4010 reported collisions – about 800 per year
- 1280 injury collisions (32% of total)
- 2712 Property Damage Only collisions (68% of total)
- 17 Fatalities (0.42% of total)

It should be noted that not all collisions are reported. In collisions where there is minimal damage and no injuries, each party may exchange information without a report being taken. Figures 1 and 2 include all reported collisions, the remaining figures only include injury and fatal collisions.



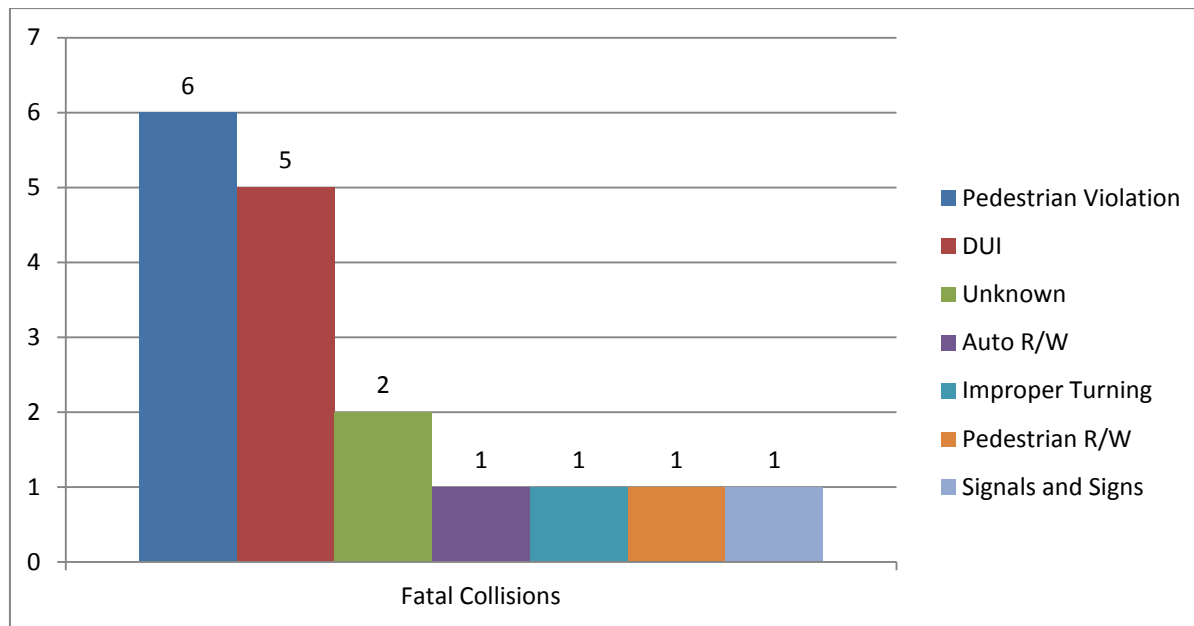
**Figure 2: Collisions- Severity by Year**

Traffic collisions are showing a downward trend since 2012 in all categories except Fatalities. Over the past 20 years, there has been an average of 2.5 fatalities per year, with over half of those collisions involving pedestrians. Also, over the same 20 years, 52% of all collisions have occurred on the State Highway. Of the pedestrian collisions, 65% have occurred on the State Highway.



**Figure 3: Primary Collision Factors for Injury Collisions**

The primary collision factors for injury crashes between 2010 and 2014 were auto right-of-way violations, traffic sign and signal violations, and unsafe speed (including following too close). Impaired driving, Improper turning, and pedestrian collisions, made up the bulk of the remaining collisions. High incident locations for injury and fatal collisions can be seen in Figure 7.



**Figure 4. Primary Collision Factors for Fatal Collisions**

The primary collision factors for fatal crashes were pedestrian violation (6), this is in cases where the officer felt the pedestrian was at fault, driving under the influence (5), unknown (2), and one each for automobile right-of-way violation, improper turning, pedestrian right-of-way violation and traffic signals and signs. Locations of fatal collisions can be seen in Figures 7-9.

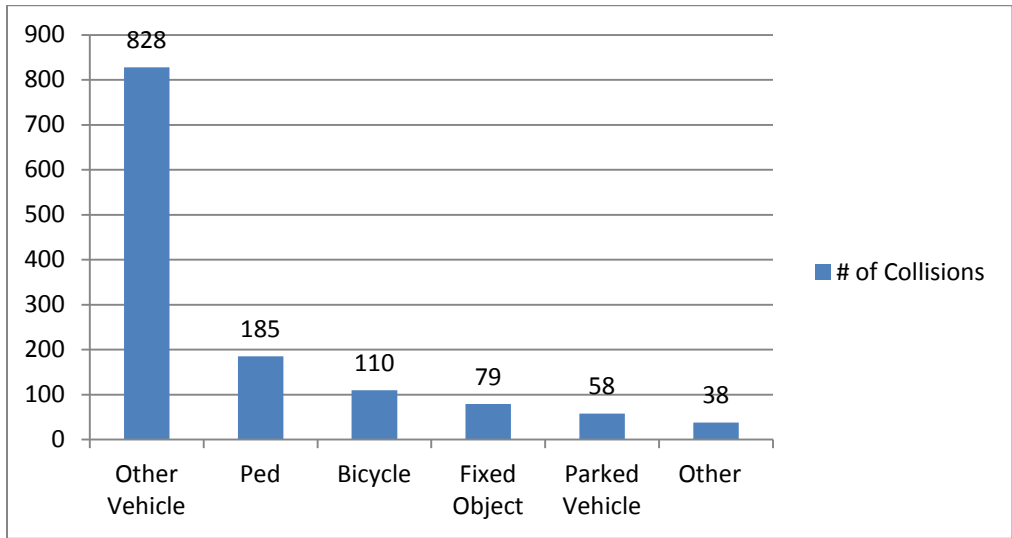


Figure 5: Injury and Fatal Collisions- Parties Involved

Figure 5 shows the parties involved in injury and fatal collisions between 2010 and 2014.

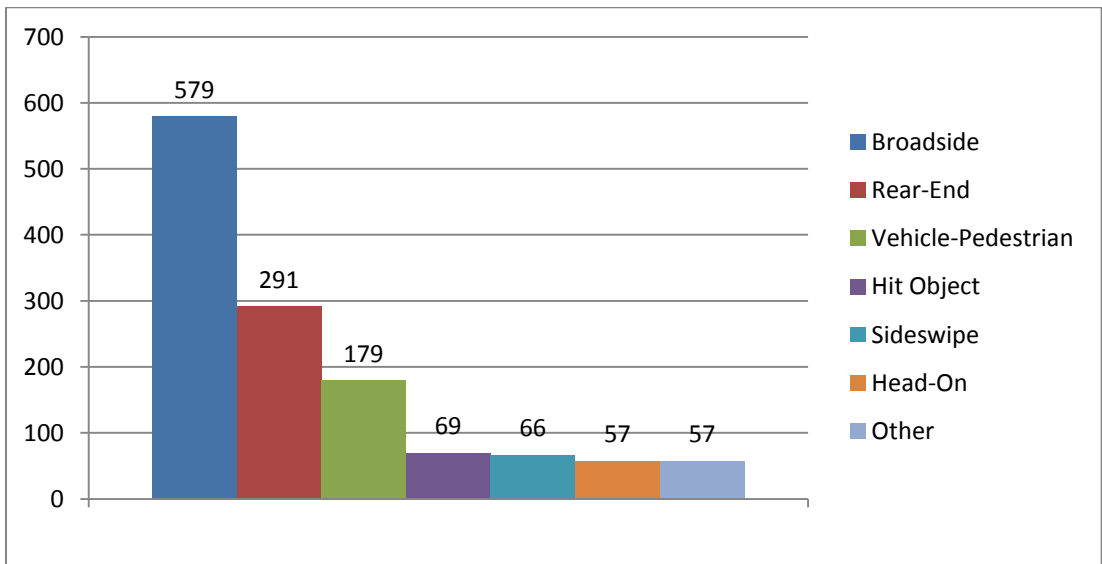


Figure 6: Injury and Fatal Collision Type

The types of collisions involving injury and fatalities are primarily broadside, rear-ends and vehicle-pedestrian type collisions.

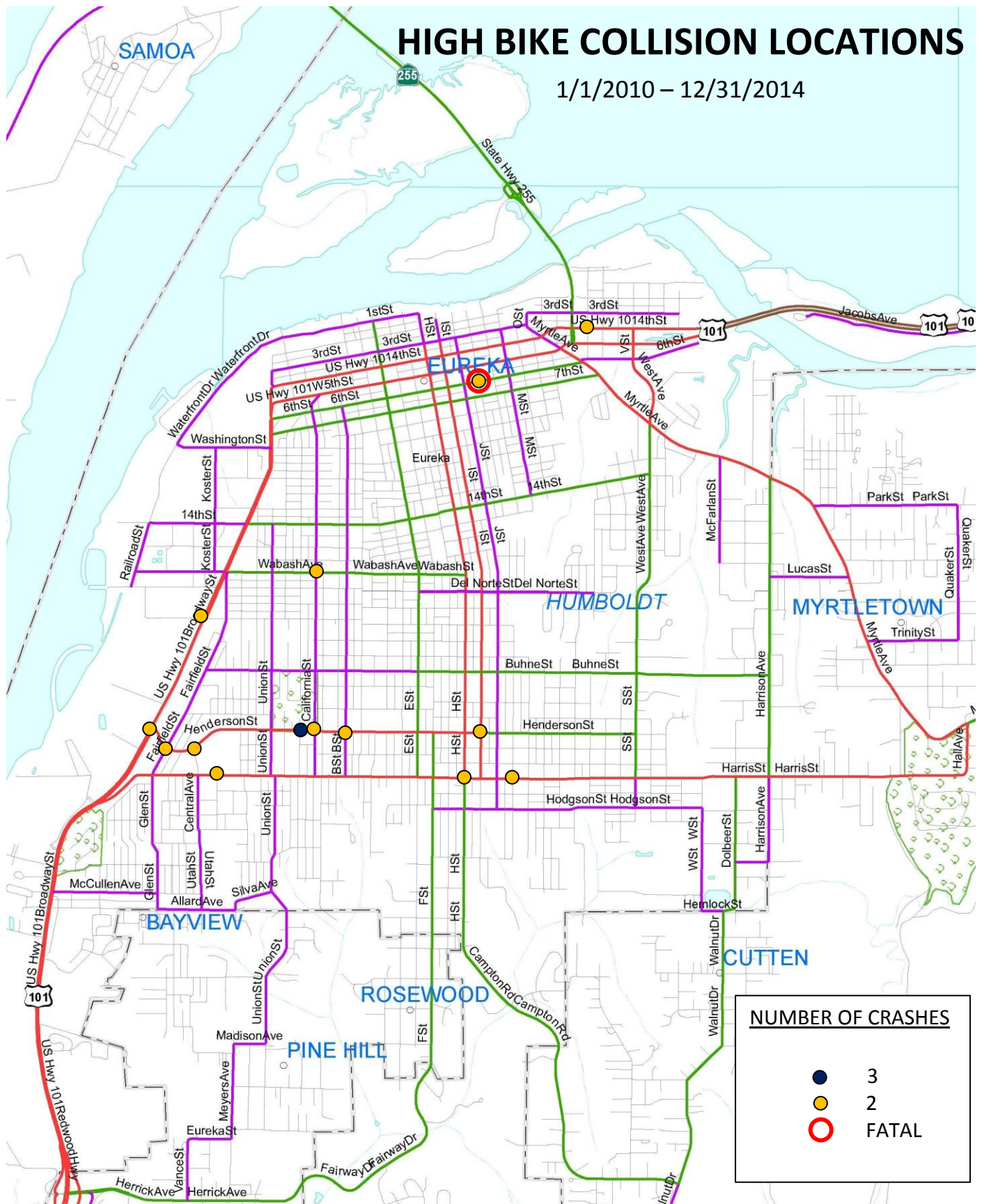


1/1/2010 – 12/31/2014



## HIGH BIKE COLLISION LOCATIONS

1/1/2010 – 12/31/2014



### Figure 8. High Bicycle Collision Locations



# HIGH PEDESTRIAN COLLISION LOCATIONS

1/1/2010 – 12/31/2014

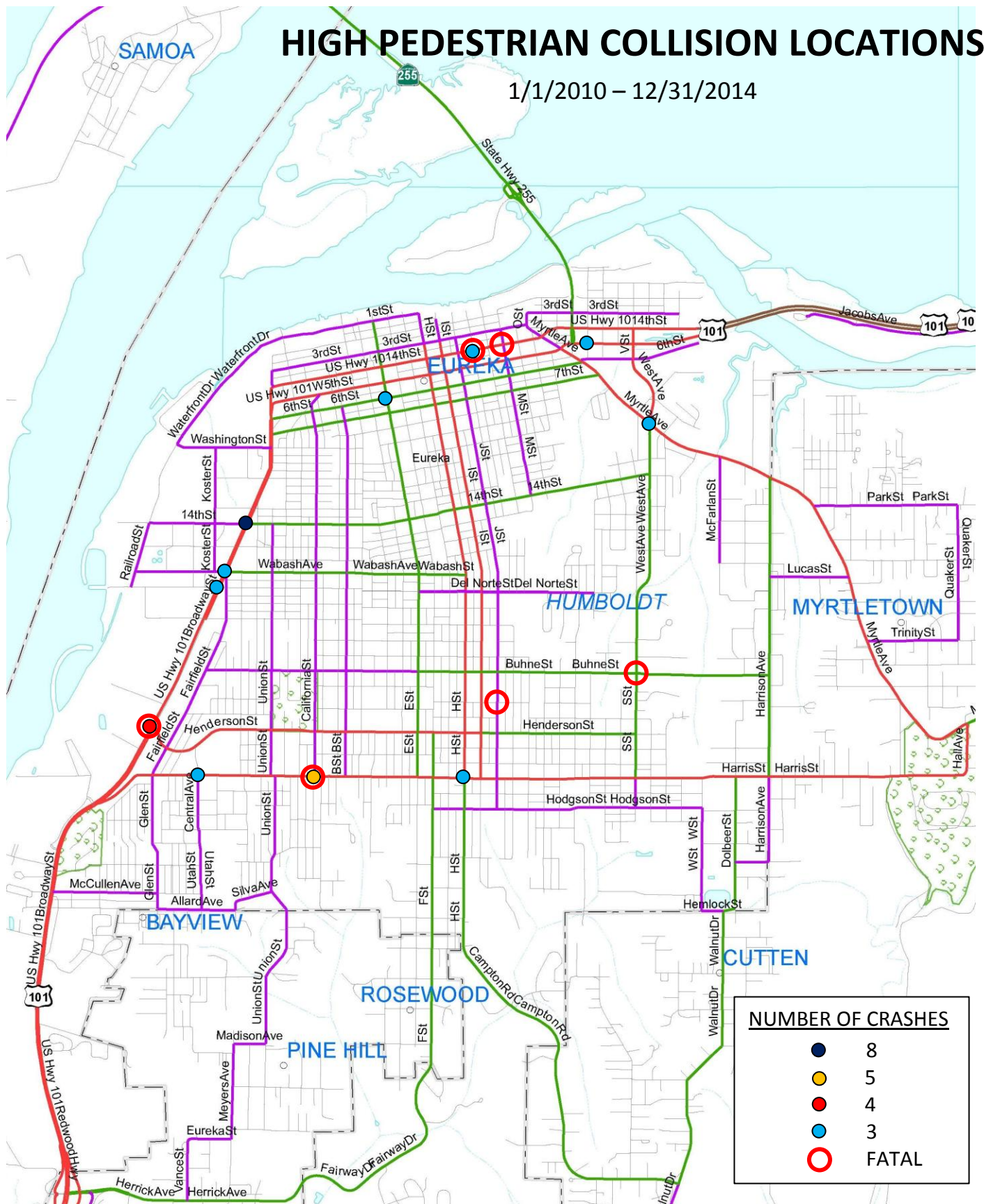


Figure 9. High Pedestrian Collision Locations

By reviewing Primary Collision Factors, Injury and Fatal Collision Numbers, and Collision Type, the emphasis areas for the City of Eureka have been determined to be:

1. Aggressive Driving resulting in broadside and rear-end type collisions. These collisions are generally caused by speeding, following too close, or taking unnecessary risks.
2. Distracted Driving resulting in running stop signs and signals and also resulting in broadside collisions.
3. Impaired Driving has caused the highest number of fatalities over the past five years and may also be involved in many of our hit-and-run type of collisions.
4. Non-motorized road users include pedestrians and bicyclists. As can be seen from the data, pedestrians and cyclists can be the victim or the cause of these types of collisions.
5. Quality of Life issues are associated with feeling safe when using our street system whether you are a motorist, bicyclist, pedestrian or other road user.

## **IDENTIFY STRATEGIES FOR AREAS OF CONCERN**

Strategies for addressing the chosen areas of concern are traffic management measures that adhere to local, state, and federal standards, rules and regulations. Operating in compliance with standards established on the local, state or national level, makes the City's actions defensible in court, offers a proven standard by which to make the effort of traffic calming more seamless, and offers a systematic approach to traffic solutions. The following is a list of some of the applicable local, regional, state, and federal standards, rules and regulations.

- City of Eureka General Plan
- City Council Strategic Visioning Plan
- City of Eureka Streetlight Policy
- City of Eureka Sidewalk Resolution No. 6219
- City of Eureka Municipal Code, Title VII: Traffic Code
- Eureka's Neighborhood Traffic Calming Plan
- Regional Bicycle Plan (HCAOG)
- Regional Pedestrian Plan (HCAOG)
- Regional Trails Plan (HCAOG)
- Regional Transportation Plan (HCAOG)
- Manual on Uniform Traffic Control Devices (MUTCD), CA supplement
- California Streets and Highways Code
- Caltrans Traffic Manual
- Caltrans Highway Design Manual
- Caltrans Standard Plans and Specifications
- California Vehicle Code (CVC)
- Americans with Disabilities Act (ADA)
- American Association of State Highway and Transportation Officials (AASHTO)

- Institute of Transportation Engineers (ITE) Manual
- Federal Highway Administration (FHWA) policies and guidelines

For transportation safety plans to be effective, care must be taken to include elements of EDUCATION, ENFORCEMENT, and ENGINEERING, the building blocks of traffic safety.

### **SECURE FUNDING**

The City of Eureka has been very successful in obtaining federal highway safety grant funding for a number of traffic safety improvements. We endeavor to continue to apply for this type of outside funding. Additional funding may be available from the general fund, gas tax, and traffic enforcement fines and fees.

### **IMPLEMENT STRATEGIES**

As funding becomes available, traffic safety strategies will be implemented. The City Council must approve staff and TSC recommended expenditures prior to construction bidding for all capital improvement projects. City staff constructed projects are approved through work order to the Public Works superintendent. Focused traffic enforcement is approved as funding and staff is available. The Traffic Safety Projects List, Appendix A2, provides a listing of completed, on-going, and future projects both within the City's jurisdiction and out of the City's jurisdiction. Those projects outside our jurisdiction have been completed (or are being completed) in partnership with the State, County, and the cycling community. Each project is cross referenced to its emphasis area.

### **SUPPORT AND ENCOURAGE PARTNERSHIPS**

The City of Eureka works closely with other agencies to improve traffic safety for all forms of transportation in and around the City. Examples of these partnerships include: Safe Routes to Schools Eureka Task Force, Humboldt Bay Bicycle Commuters Group, Caltrans, Humboldt County, HCAOG, Greater Eureka Area Travel Demand Model TAG, and the newly created Senior Action Coalition.

As seen in the Projects List, partnerships with the State and County have resulted in the completion of several projects and continued collaboration is essential.

## **OBJECTIVE 2 – Sustain a Successful Program**

### **SET A COLLISION REDUCTION GOAL**

A reasonable, attainable, and effective goal has been set at 2% per year for 10 years.

### **ASSESS RESULTS**

At year end, similar collision data as presented here will be brought to the TSC, along with any completed traffic safety projects for review and assessment.

### **REVISE PLAN**

Based on the review and comparison of annual collision data and results of completed projects, emphasis areas and collision reduction strategies may be revised.

## **GOAL 2: PRESERVE QUALITY OF LIFE**

### **OBJECTIVE 1 – Calm Neighborhood Traffic**

#### **TRANSPORTATION SAFETY COMMISSION**

The Transportation Safety Commission was created to champion the implementation of the adopted transportation objectives of the City Council. These objectives include enhancement of our neighborhoods through traffic calming measures, promoting safe and efficient flow of traffic, and encouraging alternative modes of transportation. The TSC will oversee the Neighborhood Traffic Calming Program (NTCP). Neighborhood representatives will bring their traffic issues to the TSC who will work with the neighborhood groups to identify the appropriate solution from the Traffic Calming Toolbox Matrix, Appendix A4.

#### **NEIGHBORHOOD TRAFFIC CALMING TOOLBOX**

The Neighborhood Traffic Calming Toolbox is a collection of traffic calming devices and measures with specific purposes for addressing residential street traffic concerns. The various tools within the toolbox are chosen for appropriateness, acceptability, and suitability and include components of education, enforcement, engineering, and enhancement. The neighborhood traffic calming toolbox is included in the City of Eureka's Neighborhood Traffic Calming Program document which is supplemental to the Transportation Safety Action Plan.

#### **FUNDING**

Funding for traffic calming measures may be available from federal highway safety grants, the general fund, gas tax or private sources.

#### **IMPLEMENTATION**

As funding and staff are available, solutions will be implemented.

## **REFERENCES**

More information can be found at the following websites:

City of Eureka: <http://www.ci.eureka.ca.gov/>

Humboldt County Association of Governments (HCAOG): <http://www.hcaog.net/>

Caltrans: <http://www.dot.ca.gov/hq/LocalPrograms/>

FHWA: <https://www.fhwa.dot.gov/>



# APPENDIX

- A1: TSAP FLOWCHART**
- A2: ENFORCEMENT STATISTICS/ACTIVITIES**
- A3: EMPHASIS AREAS/STRATEGIES/GOALS**
- A4: HIGH INCIDENT LOCATION RECOMMENDATIONS**
- A5: ECONOMIC COSTS OF COLLISIONS**
- A6: TRAFFIC SAFETY PROJECTS LIST**
- A7: TRAFFIC CALMING TOOLBOX MATRIX**

Mission:  
Make Eureka safe for all modes of transportation

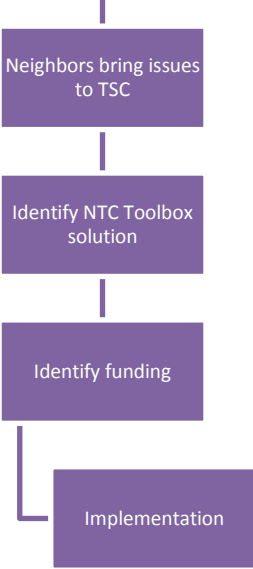
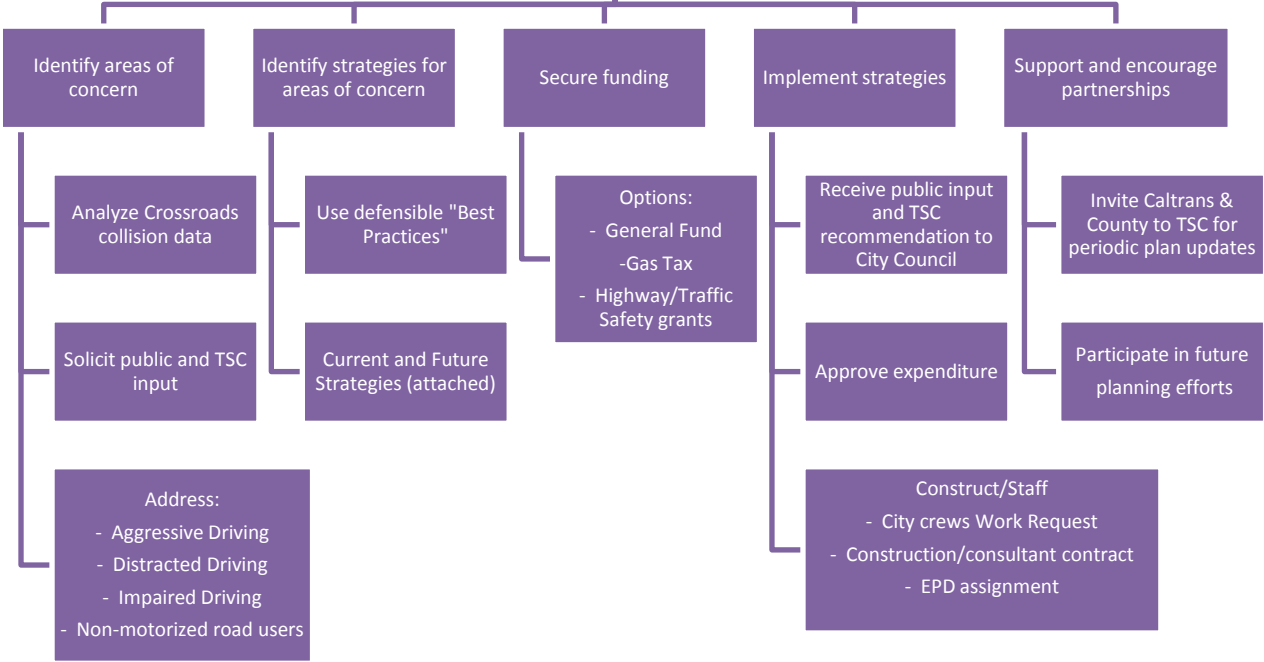
Goal 1:  
Reduce Collisions

Goal 2:  
Preserve Quality of Life

Objective 1:  
Implement Collision  
Reduction Strategies

Objective 2:  
Sustain a Successful  
Program

Objective 1:  
Calm Traffic



## ENFORCEMENT STATISTICS/ACTIVITIES

### CITATION STATISTICS

Table A2-1: Citations for Violations 2010 - 2014

	Auto R/W	Unsafe Speed	Signs & Signals	Improper Turning	Impaired Driving/ DUI	Pedestrian R/W	Pedestrian Violation	Cell phone / Text
2010	39	381	346	43	336	4	20	764
2011	43	419	244	49	334	3	51	604
2012	39	358	342	35	289	2	38	627
2013	34	885	290	36	331	14	82	986
2014	34	1768	283	35	331	9	100	612

Citation numbers (from the California Vehicle Code, CVC) used for comparisons:

Auto R/W (right-of-way): 21801A, 21801B, 21802A, 21802B, 21804A

Unsafe speed: 22350

Signs & signals: 21453A, 21453B, 21453C, 21461A, 22450A

Improper turning: 21658A, 22107

Impaired driving/DUI: 23152A, 23152B, 23152C, 23152D, 23152E, 23153A, 23153B

Pedestrian R/W (right-of-way): 21950A, 21951

Pedestrian Violation: 21950B, 21954A, 21955, 21956A

Cell phone/text: 231235A, 23123A

The number of assigned traffic officers per year:

- 2010 – 3
- 2011 – 3 (which includes one officer deployed to military)
- 2012 – 3 (which includes one officer deployed to military)
- 2013 - 4
- 2014 - 3

### TRAFFIC ENFORCEMENT ACTIVITIES

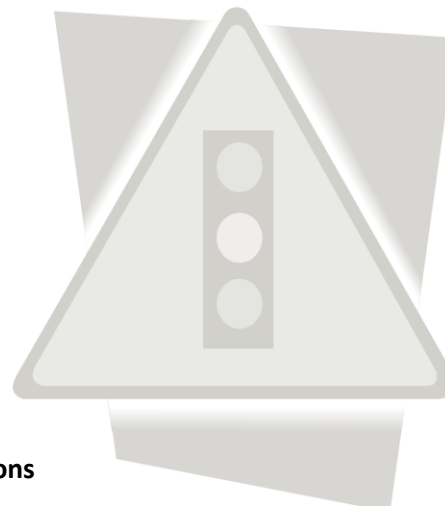
Selective Traffic Enforcement (STEP) grant activities include:

- DUI equipment, enforcement, checkpoints, and warrant sweeps
- High collision intersection patrol (red light, speed, and right-of-way yielding enforcement)
- Other primary collision factor violation enforcement (unsafe lane change, following too close, etc.)
- Special daytime motorcycle patrols
- Speed enforcement and motorcycle equipment purchased
- Court stings
- Specialized training (field sobriety testing, roadside impaired driving, drug recognition)

Every 15 Minutes events

Impaired driver offender classes

## EMPHASIS AREA 1: AGGRESSIVE DRIVING



### TARGET GOAL BY 2024

#### 20% Reduction in injury and fatal collisions

Aggressive driving refers to the operation of a motor vehicle in a selfish, bold, and pushy manner without regard for the rights and safety of other road users. Aggressive behaviors like traveling at unsafe speeds, following too close, disobeying signs and signals, making improper lane changes, failure to yield, disregard for traffic controls, or taking other unnecessary risks can result in broadside and rear-end type collisions.

#### Current strategies to reduce fatal and injury collisions related to aggressive driving:

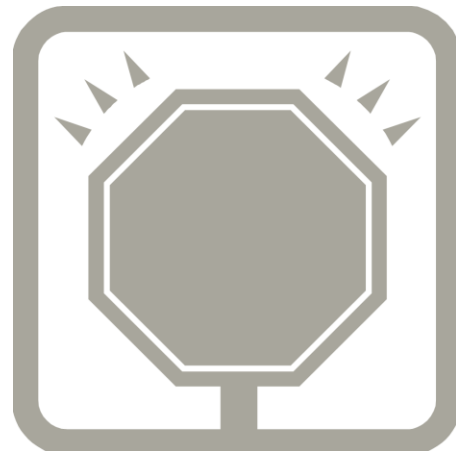
- ❖ Police enforcement
- ❖ Guardrail
- ❖ Radar speed signs
- ❖ Protected left turn signalization
- ❖ Curve warning signs
- ❖ Speed limit reduction
- ❖ Optimized signal timing
- ❖ Red light running fine signs
- ❖ “No Parking” zone at intersections
- ❖ Warranted four way stop

#### Future additional strategies to reduce fatal and injury collisions related to aggressive driving:

- ❖ Red light running cameras
- ❖ Increased fine rate
- ❖ Flashing yellow signal arrows
- ❖ Education/safety campaign
- ❖ Increased police enforcement
- ❖ Increase length of “No Parking” zone at intersections



## EMPHASIS AREA 2: DISTRACTED DRIVING



### TARGET GOAL BY 2024

#### 20% Reduction in injury and fatal collisions

Distracted driving is the act of driving while engaged in other activities that take the driver's attention away from the road. Distractions while driving can be separated into three distinct groups: visual, manual, and cognitive. Visual distraction involves taking one's eyes off the road, while manual distraction involves taking one's hands off the wheel. Cognitive distraction occurs when an individual's focus is not directly on the act of driving and his/her mind "wanders".

Distractions influenced by technology, especially text messaging or talking on the phone, can require a combination of visual, manual, and cognitive attention from the driver, thus making these types of distractions particularly dangerous. All distractions compromise the safety of the driver, passengers, bystanders, and those in other vehicles. Broadside collisions due to red light running and failure to stop at stop signs are often the result of driving distracted.

#### Current strategies to reduce fatal and injury collisions related to distracted driving:

- ❖ Improved lane delineation
- ❖ Channelizers
- ❖ Larger traffic signals
- ❖ Larger STOP signs
- ❖ Police enforcement of cell phone use
- ❖ Red light running fine signs

#### Future additional strategies to reduce fatal and injury collisions related to distracted driving:

- ❖ Red light running cameras
- ❖ Increased fine rate
- ❖ Education/safety campaign
- ❖ Increased police enforcement

## EMPHASIS AREA 3: IMPAIRED DRIVING



### TARGET GOAL BY 2024

**20% Reduction in injury and fatal collisions**

Per the US Department of Transportation, 30 people in the US die in motor vehicle crashes that involve an alcohol-impaired driver, every day. This amounts to one death every 48 minutes. People who drink and drive put everyone on the road in danger. In the City of Eureka, impaired driving has resulted in the second highest number of fatalities over the past five years and may also be involved in many of our hit-and-run type of collisions.

#### **Current strategies to reduce fatal and injury collisions related to driving while impaired:**

- ❖ Police enforcement
- ❖ STEP grant enforcement
- ❖ DUI checkpoints

#### **Future additional strategies to reduce fatal and injury collisions related to driving while impaired:**

- ❖ Education
- ❖ Increased police enforcement
- ❖ Increase number of DUI checkpoints

## EMPHASIS AREA 4: NON-MOTORIZED ROAD USERS



### TARGET GOAL BY 2024

**20% Reduction in injury and fatal collisions**

Non-motorized road users include pedestrians and bicyclists. Multi-lane, one way streets pose a particular challenge to pedestrians and cyclists in Eureka. Many bicycle collisions occur due to wrong way riding on one way streets. Enforcement of cyclists, pedestrian, and motorist's behaviors will help to improve road safety. As can be seen from the data, pedestrians and cyclists can be the victim or the cause of these types of collisions.

### Current strategies to reduce fatal and injury collisions related to pedestrians and bicyclists:

- ❖ In-roadway pedestrian signs
- ❖ Sidewalk infill
- ❖ Pedestrian activated signs and lights
- ❖ Crosswalk warning signs and markings
- ❖ High visibility crosswalk markings
- ❖ Pedestrian refuges/medians
- ❖ Raised crosswalks
- ❖ Striped bike lanes
- ❖ "Share the Road" signs and sharrows
- ❖ Sidewalk bulb outs
- ❖ Countdown pedestrian signals
- ❖ Police enforcement

### Future additional strategies to reduce fatal and injury collisions related to pedestrians and bicyclists:

- ❖ Bike boulevards
- ❖ Pedestrian only roads (pedestrian mall?)
- ❖ HAWK crosswalk signals
- ❖ Increased police enforcement
- ❖ Pedestrian enforcement "stings"
- ❖ Bike "Ride with Traffic" signs



## EMPHASIS AREA 5: QUALITY OF LIFE



### TARGET GOAL BY 2024

#### **Preserve and enhance the quality of life through neighborhood traffic calming measures.**

Neighborhood traffic calming conveys the desires of residents who wish to maintain peaceful and people-friendly streets within their neighborhoods by minimizing or eliminating undesirable impacts caused by motorists. The City of Eureka's Neighborhood Traffic Calming Program aims to facilitate the maintenance and enhancement of elements characteristic of livable communities, which include elements that support security and safety, the sense of home and privacy, and the feeling of community identification.

#### **Current strategies for neighborhood quality of life preservation:**

- ❖ Reduced speed limits, install signs and legends
- ❖ Prima facie speed limit signs (25 mph)
- ❖ Street trees
- ❖ Street lighting
- ❖ Marked crosswalks
- ❖ On-street parking management
- ❖ Police drive-bys
- ❖ Sight distance improvements

#### **Future strategies for neighborhood quality of life preservation:**

- ❖ Neighborhood Traffic Calming Plan (NTCP)
- ❖ NTCP Traffic Calming Countermeasures



# Collision Diagram

Horizontal Street: 14TH ST

Vertical Street: BROADWAY

From: 1/1/2010 To: 12/31/2014

Date Prepared: 8/5/2015

## Pedestrian Collision Location - Ranking 1: Broadway at 14<sup>th</sup> Street

### PATTERN:

No discernible pattern.

### RECOMMENDATION:

Work with Caltrans, intersection is on the State Highway.

### ACTION:

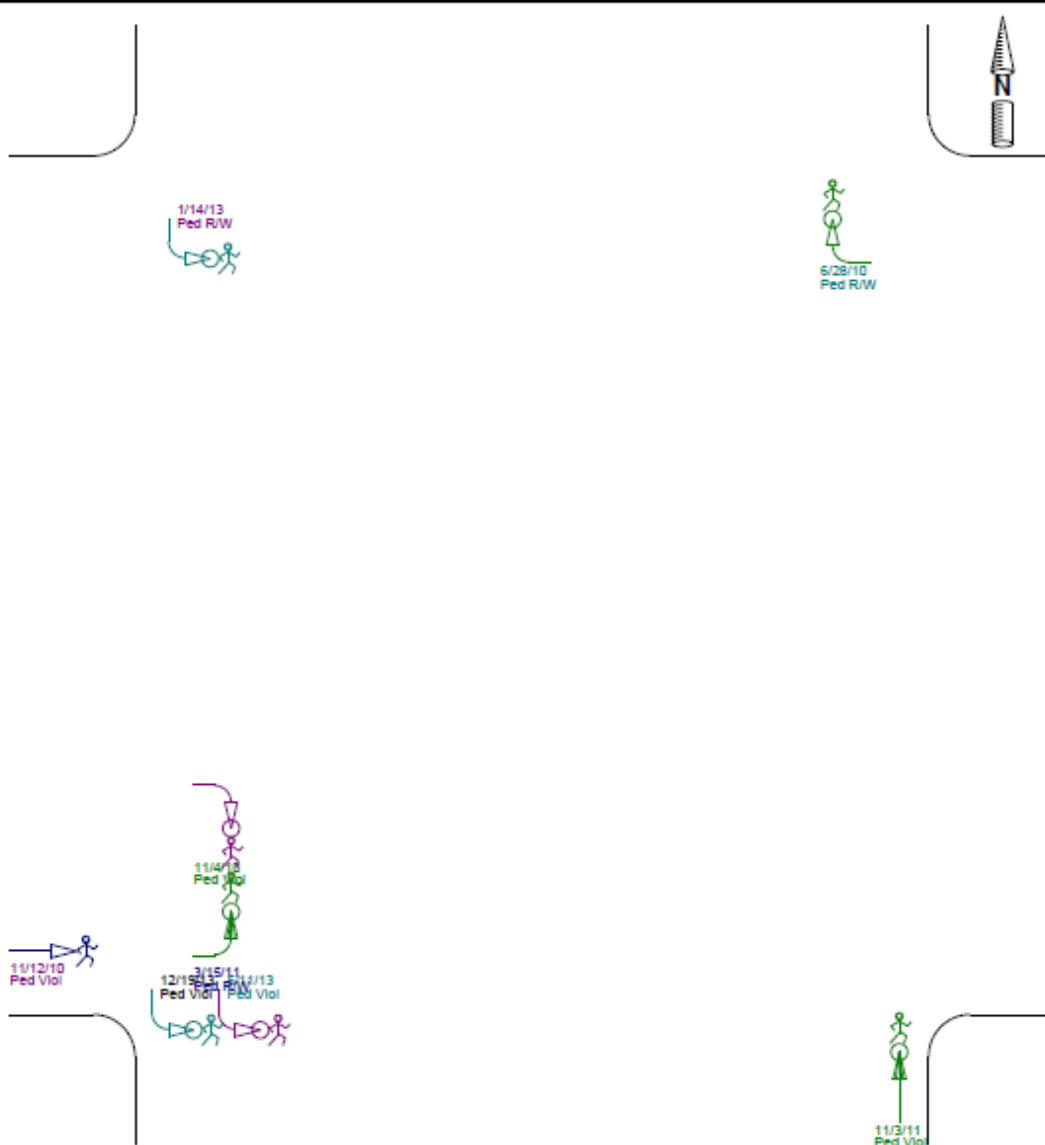
Caltrans is working on a Broadway Feasibility Study with focus on improving traffic safety for all modes.

### Color Legend – Highest Degree of Injury

Maroon	=	Fatal
Purple	=	Severe Injury
Green	=	Other Visible Injury
Teal	=	Complaint of Pain
Dark Blue	=	Property Damage Only

### Settings Used For Query

Parameter	Setting
Street Name	BROADWAY
Cross Street	14TH ST
Starting Date	1/1/2010
Ending Date	12/31/2014
Intersection	Intersection Related
Involved With	'Pedestrian'



### Number of Collisions

- 1 Property Damage Only
- 7 Injury Collisions
- 0 Fatal Collisions
- 8 Total Collisions

### Legend

→ Moving Vehicle	↗ Right Turn	🚶 Pedestrian
⏹ Stopped Vehicle	↖ Left Turn	🚗 Fixed Object
↔ Backing Vehicle	↔ Sideswipe	🚲 Bicycle
↘ Ran Off Road	☀ Day	🍷 DUI
⋯ Movement Unknown	🌙 Night	👤 Injury
		💀 Fatal

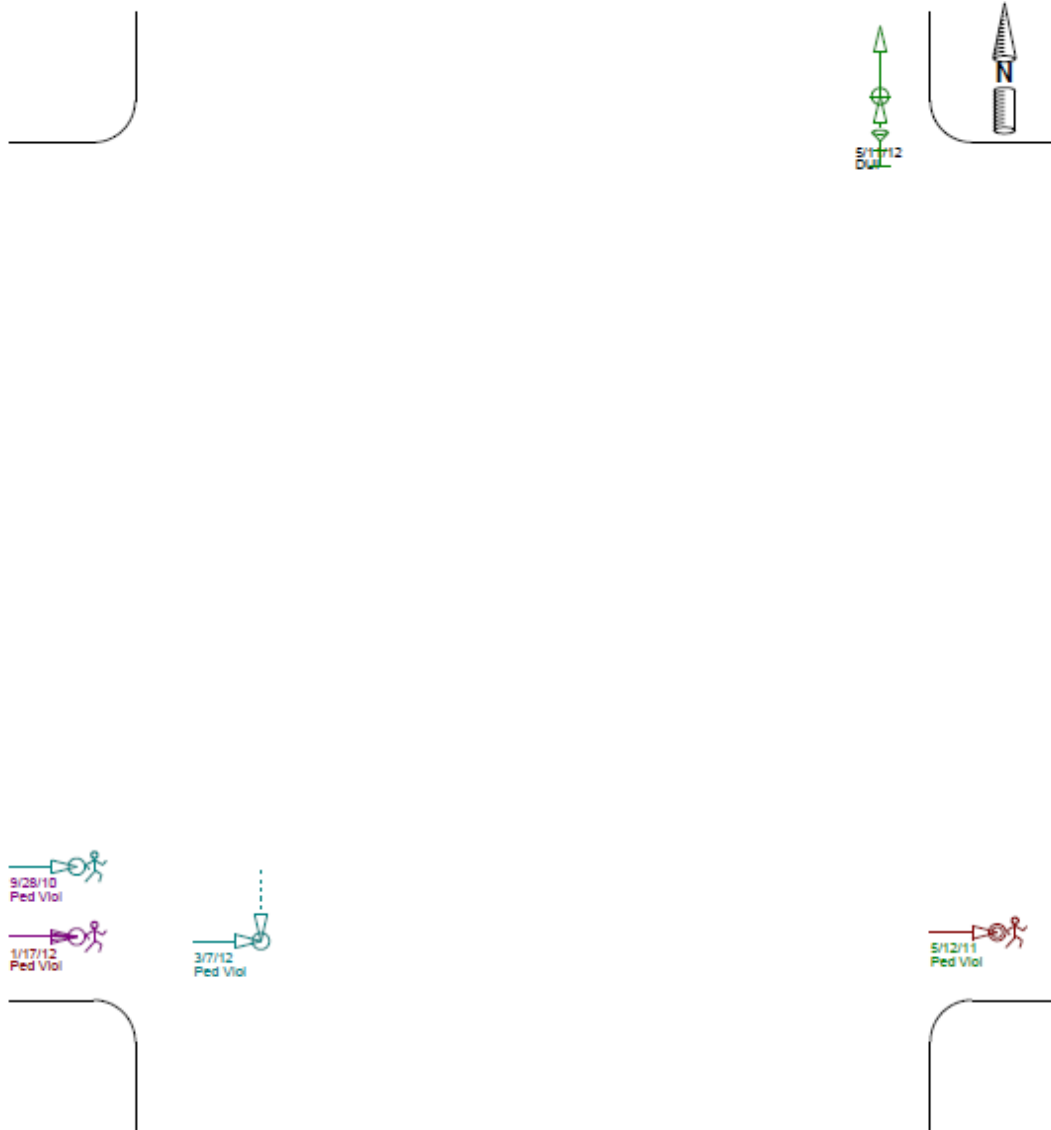
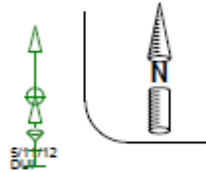
# Collision Diagram

Horizontal Street: HARRIS ST (E)

Vertical Street: CALIFORNIA ST

From: 1/1/2010 To: 12/31/2014

Date Prepared: 8/5/2015



## Number of Collisions

- 0 Property Damage Only
- 4 Injury Collisions
- 1 Fatal Collisions
- 5 Total Collisions

## Legend

- |                    |              |                |
|--------------------|--------------|----------------|
| → Moving Vehicle   | ↩ Right Turn | 🚶 Pedestrian   |
| ⏹ Stopped Vehicle  | ↩ Left Turn  | 🚗 Fixed Object |
| ↔ Backing Vehicle  | ↔ Sideswipe  | 🚲 Bicycle      |
| ↔ Ran Off Road     | ☀ Day        | 🍷 DUI          |
| ⋯ Movement Unknown | 🌙 Night      | 👤 Injury       |
|                    |              | 💀 Fatal        |

## Pedestrian Collision Location - Ranking 2: California at Harris Street

### PATTERN:

Pedestrians stepping out in front of vehicles on side of intersection where there are no painted crosswalk markings.

### RECOMMENDATION:

Enhanced crosswalk markings installed on east side of California, across Harris Street in 2012. No additional pedestrian collisions since 2012.

### ACTION:

Continue to monitor.

## Color Legend – Highest Degree of Injury

- |           |   |                      |
|-----------|---|----------------------|
| Maroon    | = | Fatal                |
| Purple    | = | Severe Injury        |
| Green     | = | Other Visible Injury |
| Teal      | = | Complaint of Pain    |
| Dark Blue | = | Property Damage Only |

## Settings Used For Query

Parameter	Setting
Street Name	HARRIS ST
Cross Street	CALIFORNIA ST (E)
Starting Date	1/1/2010
Ending Date	12/31/2014
Intersection Involved With	Intersection Related 'Pedestrian'

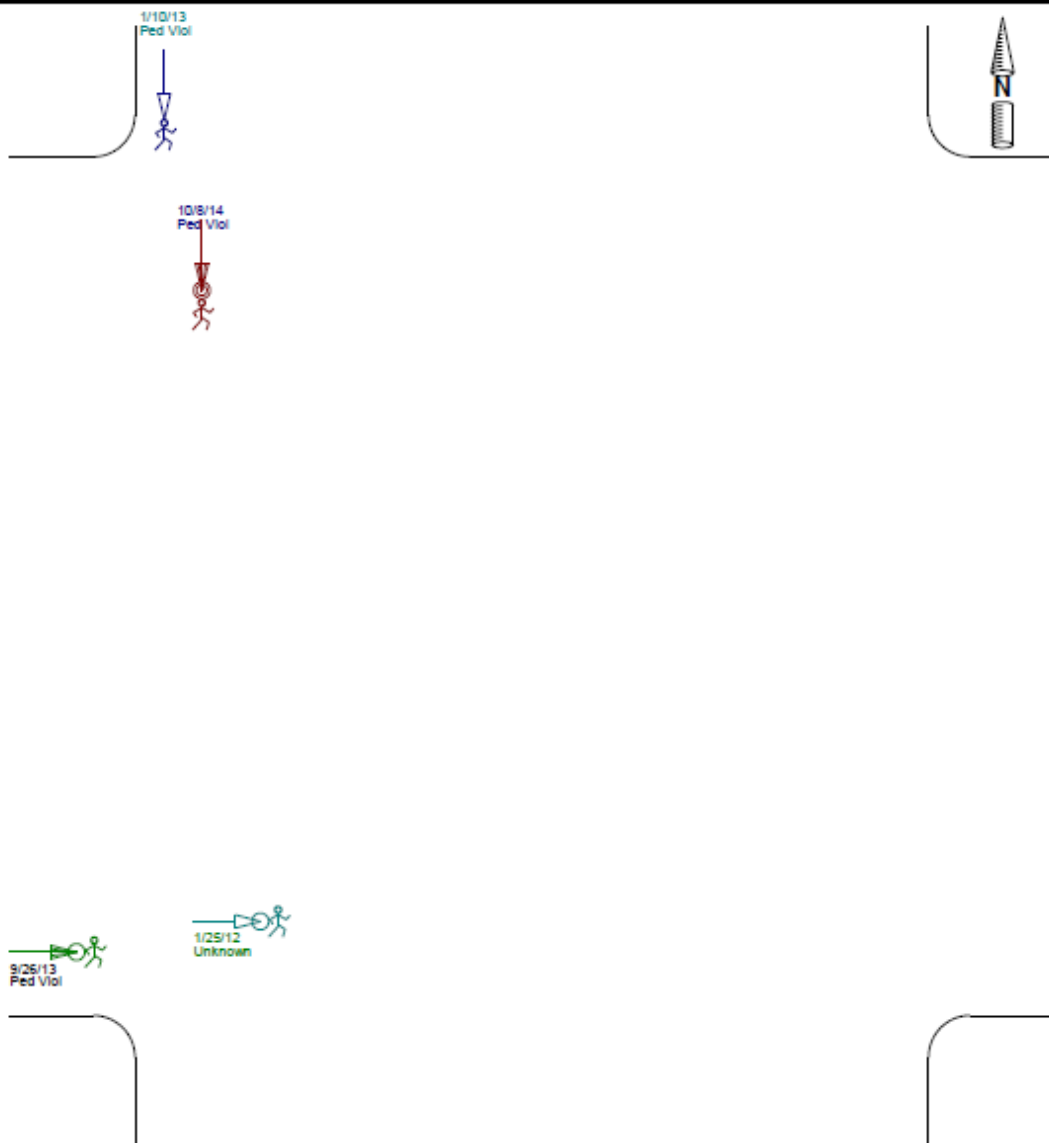
## Collision Diagram

Horizontal Street: HENDERSON ST

From: 1/1/2010 To: 12/31/2014

Vertical Street: BROADWAY

Date Prepared: 8/5/2015



### Number of Collisions

- 1 Property Damage Only
- 2 Injury Collisions
- 1 Fatal Collisions
- 4 Total Collisions

### Legend

- Moving Vehicle
- Stopped Vehicle
- Backing Vehicle
- Ran Off Road
- Movement
- Unknown

- ↗ Right Turn
- ↖ Left Turn
- ↔ Sideswipe
- Day
- Night

- 🚶 Pedestrian
- 🚗 Fixed Object
- 🚲 Bicycle
- 🚔 DUI
- 🚑 Injury
- 💀 Fatal

## Pedestrian Collision Location - Ranking 3: Broadway at Henderson Street

### PATTERN:

Pedestrian violations, with pedestrians entering the roadway in front of vehicles.

### RECOMMENDATION:

Encourage awareness of appropriate pedestrian crossing behaviors. Intersection is on State Highway.

### ACTION:

Caltrans is working on a Broadway Feasibility Study with focus on improving traffic safety for all modes.

### Color Legend – Highest Degree of Injury

Maroon	=	Fatal
Purple	=	Severe Injury
Green	=	Other Visible Injury
Teal	=	Complaint of Pain
Dark Blue	=	Property Damage Only

### Settings Used For Query

Parameter	Setting
Street Name	BROADWAY
Cross Street	HENDERSON ST
Starting Date	1/1/2010
Ending Date	12/31/2014
Intersection Involved With	Intersection Related 'Pedestrian'

# Collision Diagram

Horizontal Street: HENDERSON ST

From: 1/1/2010 To: 12/31/2014

Vertical Street: PINE ST

Date Prepared: 8/5/2015

## Bicycle Collision Location - Ranking 1: Henderson at Pine Street

### PATTERN:

Wrong way riding cyclists struck by northbound motorists.

### RECOMMENDATION:

Increased enforcement and (R9-3cP) "Ride with Traffic" signs posted on back of existing Bike Lane signs.

### ACTION:

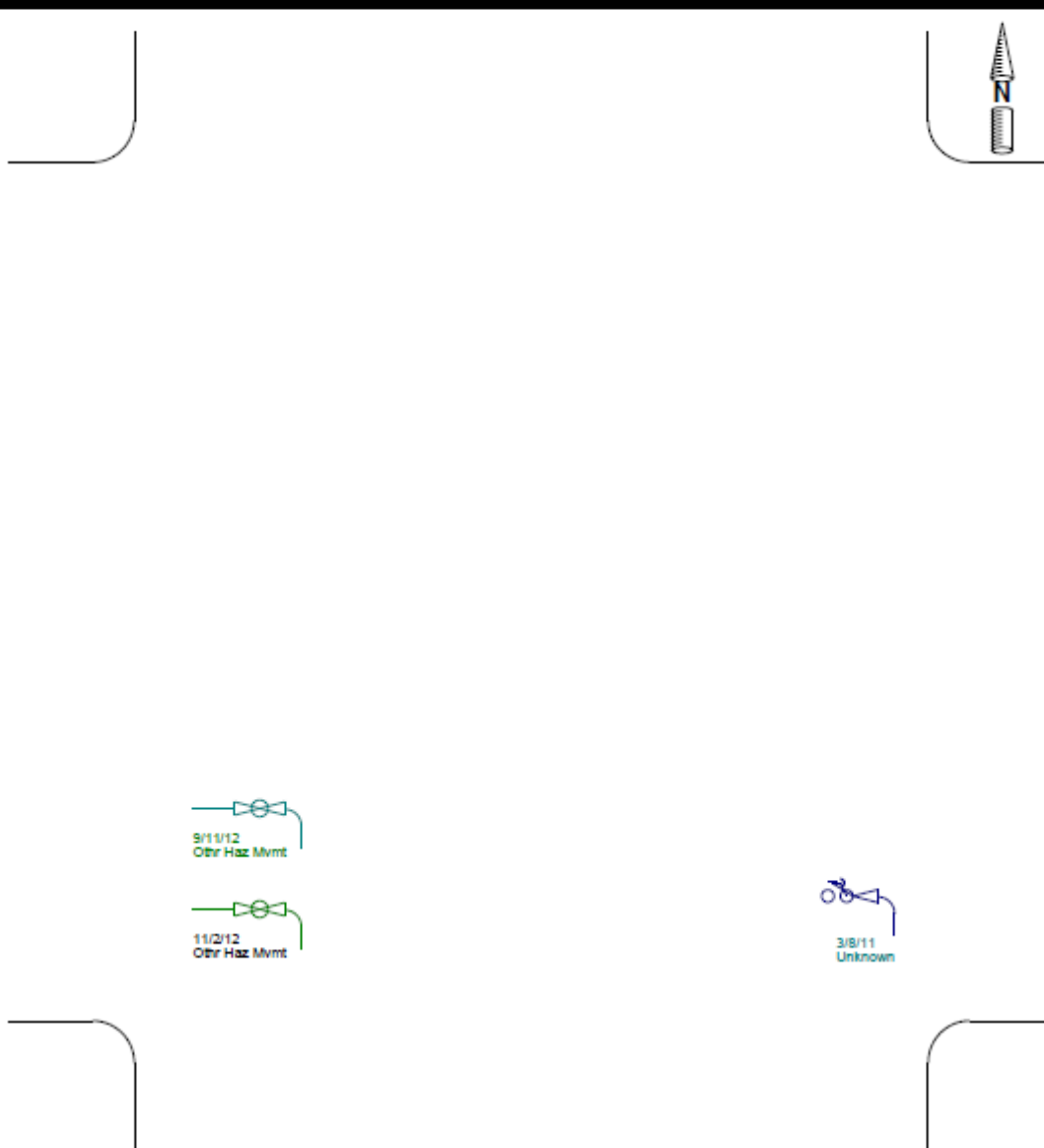
Continue to monitor.

### Color Legend – Highest Degree of Injury

Maroon	=	Fatal
Purple	=	Severe Injury
Green	=	Other Visible Injury
Teal	=	Complaint of Pain
Dark Blue	=	Property Damage Only

### Settings Used For Query

Parameter	Setting
Street Name	HENDERSON ST
Cross Street	PINE ST
Starting Date	1/1/2010
Ending Date	12/31/2014
Intersection	Intersection Related
Involved With	'Bicycle'



### Number of Collisions

- 1 Property Damage Only
- 2 Injury Collisions
- 0 Fatal Collisions
- 3 Total Collisions

### Legend

	Moving Vehicle		Right Turn		Pedestrian
	Stopped Vehicle		Left Turn		Fixed Object
	Backing Vehicle		Sideswipe		Bicycle
	Ran Off Road		Day		DUI
	Movement Unknown		Night		Injury
					Fatal



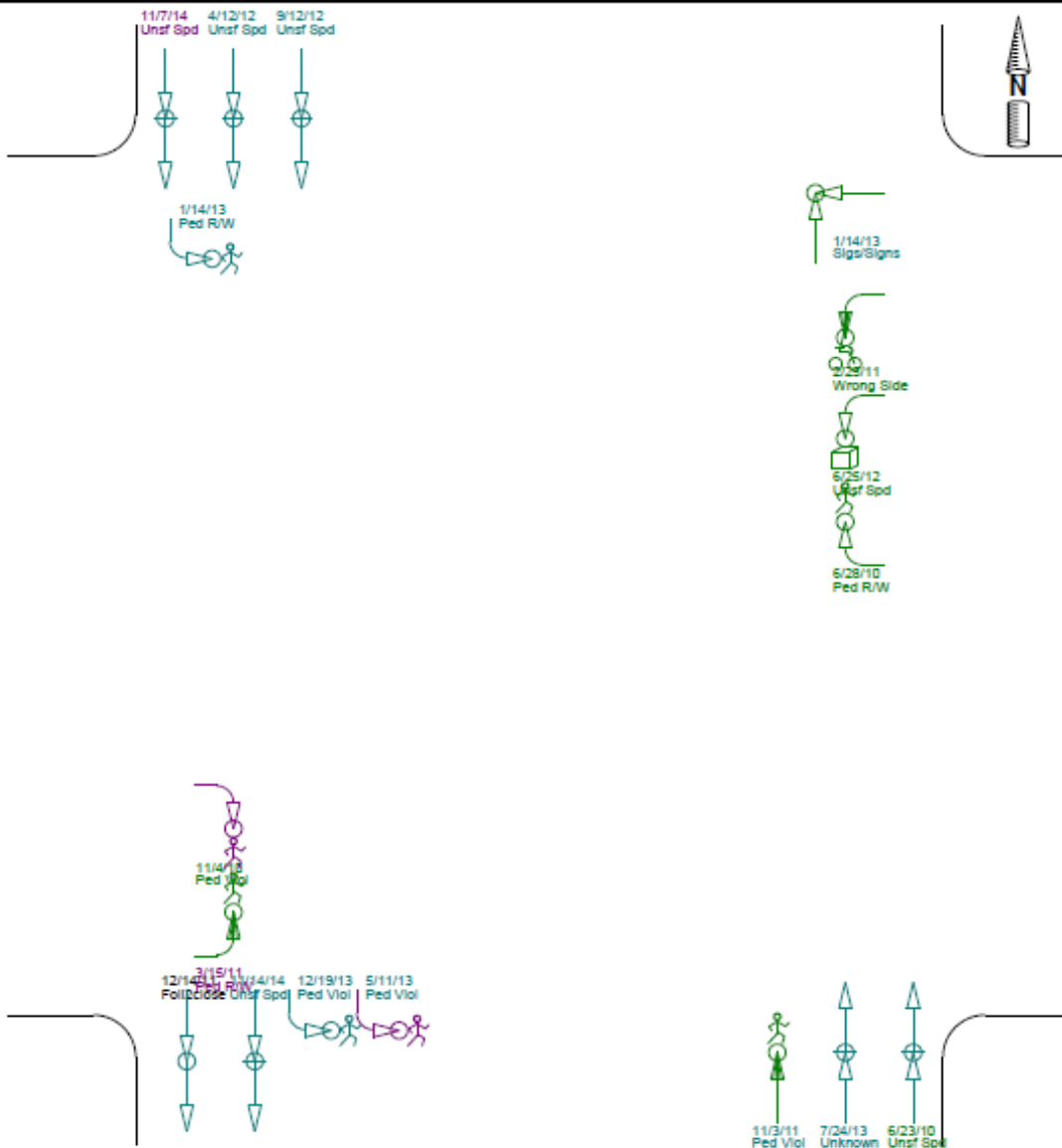
# Collision Diagram

Horizontal Street: 14TH ST

Vertical Street: BROADWAY

From: 1/1/2010 To: 12/31/2014

Date Prepared: 8/5/2015



## Number of Collisions

0 Property Damage Only  
17 Injury Collisions  
0 Fatal Collisions  
17 Total Collisions

## Legend

➡ Moving Vehicle	↗ Right Turn	🚶 Pedestrian
⏹ Stopped Vehicle	↖ Left Turn	🚗 Fixed Object
➡➡ Backing Vehicle	↔ Sideswipe	🚲 Bicycle
➡➡ Ran Off Road	☀ Day	🚰 DUI
➡..... Movement Unknown	🌙 Night	🚰 Injury
		🚰 Fatal

## High Incident Collision Location- Ranking 1: Broadway at 14<sup>th</sup> Street

### PATTERN:

Rear-end collisions resulting from unsafe speed (too fast for conditions) or following too close and a high percentage of pedestrian collisions.

### RECOMMENDATION:

Improve signal control type. Work with Caltrans, intersection is on the State Highway.

### ACTION:

Joint City/Caltrans project to consider Adaptive Signal Control system on Broadway corridor. Systems Engineering currently under development.

## Color Legend – Highest Degree of Injury

Maroon	=	Fatal
Purple	=	Severe Injury
Green	=	Other Visible Injury
Teal	=	Complaint of Pain
Dark Blue	=	Property Damage Only

## Settings Used For Query

Parameter	Setting
Street Name	BROADWAY
Cross Street	14TH ST
Starting Date	1/1/2010
Ending Date	12/31/2014
Intersection	Intersection Related
Highest Injury Degree	All Injury & Fatal

## Collision Diagram

Horizontal Street: HENDERSON ST

From: 1/1/2010 To: 12/31/2014

Vertical Street: H ST

Date Prepared: 8/5/2015

### High Incident Collision Location- Ranking 2: Henderson at H Street

#### PATTERN:

Red light violation by westbound motorists on Henderson Street resulting in broadside collisions.

#### RECOMMENDATION:

Improve signal visibility and control type.

#### ACTION:

Signal indications upgraded from 8" to 12" diameter in 2013. Evaluate changes to signal timing. Conduct focused enforcement and continue to monitor.

#### Color Legend – Highest Degree of Injury

Maroon	=	Fatal
Purple	=	Severe Injury
Green	=	Other Visible Injury
Teal	=	Complaint of Pain
Dark Blue	=	Property Damage Only

#### Settings Used For Query

Parameter	Setting
Street Name	HENDERSON ST
Cross Street	H ST
Starting Date	1/1/2010
Ending Date	12/31/2014
Intersection	Intersection Related
Highest Injury Degree	All Injury & Fatal

#### Number of Collisions

0 Property Damage Only  
17 Injury Collisions  
0 Fatal Collisions  
17 Total Collisions  
Collisions Not Plotted: 6

#### Legend

Moving Vehicle  
 Stopped Vehicle  
 Backing Vehicle  
 Ran Off Road  
 Movement Unknown

Right Turn  
 Left Turn  
 Sideswipe  
 Day  
 Night

Pedestrian  
 Fixed Object  
 Bicycle  
 DUI  
 Injury  
 Fatal

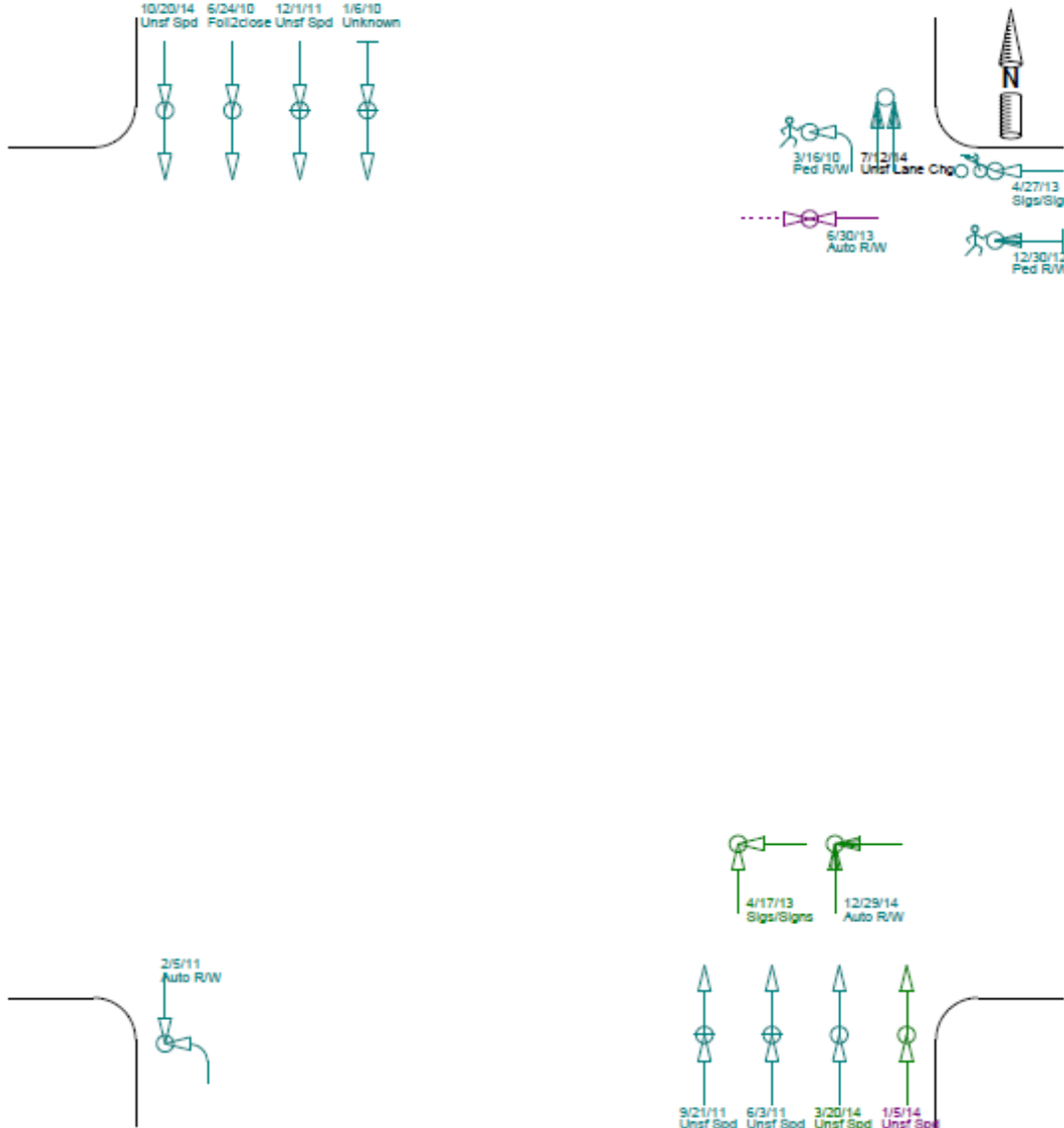
# Collision Diagram

Horizontal Street: WABASH AVE

Vertical Street: BROADWAY

From: 1/1/2010 To: 12/31/2014

Date Prepared: 8/5/2015



## Number of Collisions

0 Property Damage Only  
16 Injury Collisions  
0 Fatal Collisions  
16 Total Collisions

## Legend

Moving Vehicle	Right Turn	Pedestrian
Stopped Vehicle	Left Turn	Fixed Object
Backing Vehicle	Sideswipe	Bicycle
Ran Off Road	Day	DUI
Movement Unknown	Night	Injury
		Fatal

## High Incident Collision Location- Ranking 3: Broadway at Wabash

### PATTERN:

Rear-end collisions resulting from unsafe speed (too fast for conditions) or following too close.

### RECOMMENDATION:

Improve signal control type. Work with Caltrans, intersection is on the State Highway.

### ACTION:

Joint City/Caltrans project to consider Adaptive Signal Control system on Broadway corridor. Systems Engineering currently under development.

## Color Legend – Highest Degree of Injury

Maroon	=	Fatal
Purple	=	Severe Injury
Green	=	Other Visible Injury
Teal	=	Complaint of Pain
Dark Blue	=	Property Damage Only

## Settings Used For Query

Parameter	Setting
Street Name	BROADWAY
Cross Street	WABASH AVE
Starting Date	1/1/2010
Ending Date	12/31/2014
Intersection	Intersection Related

# Collision Diagram

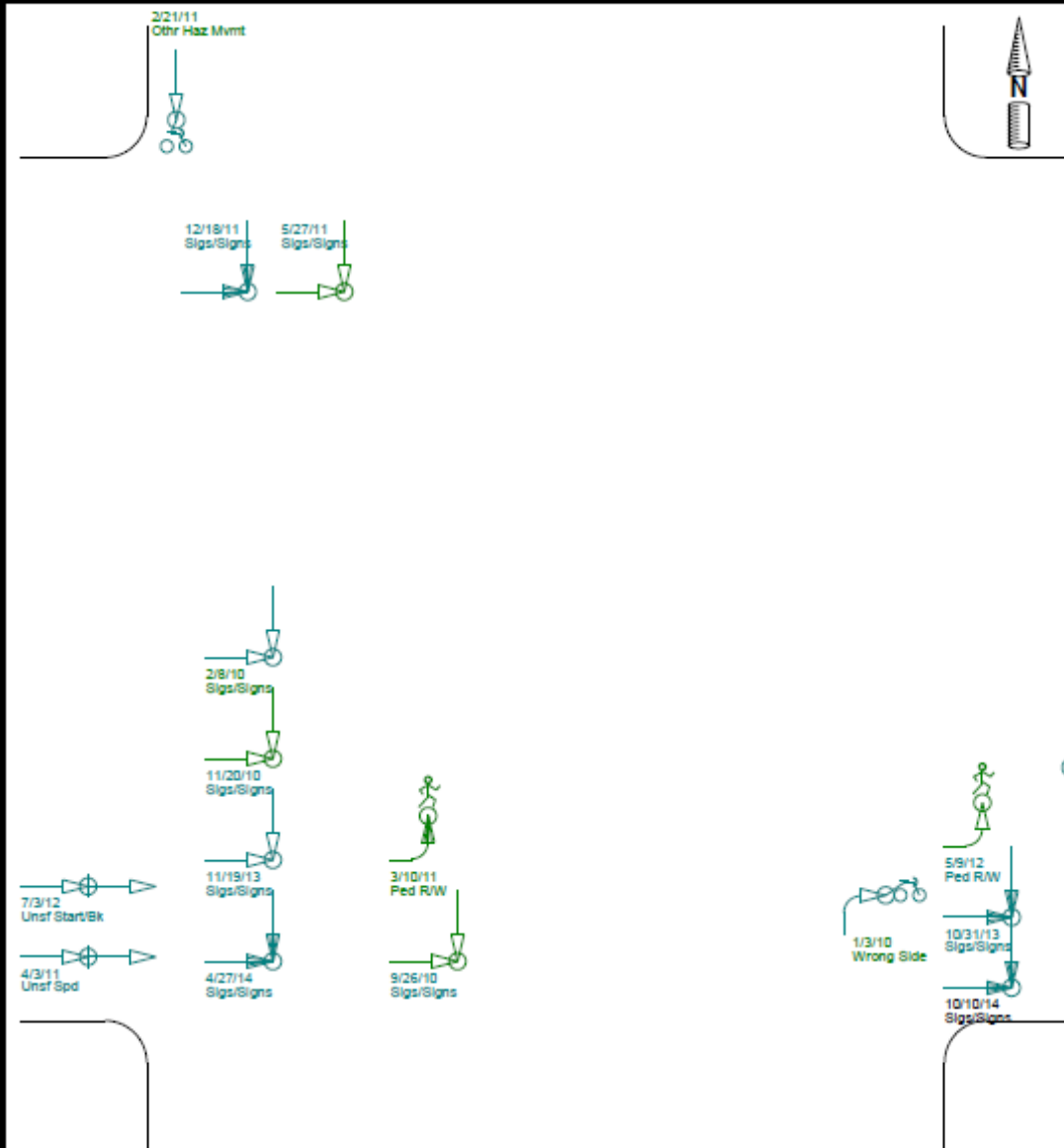
Horizontal Street: HARRIS ST

From: 1/1/2010 To: 12/31/2014

Vertical Street: H ST

Date Prepared: 8/5/2015

## High Incident Collision Location- Ranking 4: Harris at H Street



### PATTERN:

Red light violation by eastbound motorists on Harris Street resulting in broadside collisions.

### RECOMMENDATION:

Improve signal visibility and control type.

### ACTION:

Signal indications upgraded from 8" to 12" diameter in 2013. Evaluate changes to signal timing. Conduct focused enforcement and continue to monitor.

### Color Legend – Highest Degree of Injury

Maroon	=	Fatal
Purple	=	Severe Injury
Green	=	Other Visible Injury
Teal	=	Complaint of Pain
Dark Blue	=	Property Damage Only

### Settings Used For Query

Parameter	Setting
Street Name	HARRIS ST
Cross Street	H ST
Starting Date	1/1/2010
Ending Date	12/31/2014
Intersection	Intersection Related
Highest Injury Degree	All Injury & Fatal

### Number of Collisions

0	Property Damage Only
16	Injury Collisions
0	Fatal Collisions
16	Total Collisions

### Legend

	Moving Vehicle		Right Turn		Pedestrian
	Stopped Vehicle		Left Turn		Fixed Object
	Backing Vehicle		Sideswipe		Bicycle
	Ran Off Road		Day		DUI
	Movement Unknown		Night		Injury
					Fatal

# COST OF MOTOR VEHICLE COLLISIONS

## ACCIDENT COSTS

This information is provided by the Federal Highway Administration (FHWA), the National Safety Council and the Center for Disease Control.

Estimates of accident costs vary significantly but two methods currently in use include an economic cost framework and a comprehensive cost framework. The economic cost is the tangible monetary cost that includes the costs to the motorists, insurance companies, and medical providers. Comprehensive cost analysis adds the costs society is willing to pay to prevent injury and loss of life. This includes values of lost quality of life associated with deaths and injuries in addition to economic costs. FHWA recommends that comprehensive costs be used by State and local highway and safety agencies to determine motor vehicle accident costs for benefit-cost analysis.

Table A5-1: Average Comprehensive Costs, 2012

Collision Type	Dollar Loss
Fatal	\$4,538,000
Incapacitating injury	\$230,000
Non-incapacitating evident injury	\$58,700
Possible injury	\$28,000
Property damage only	\$2,500

Source: National Safety Council: Costs of Motor Vehicle Injuries

The Eureka Police Department's collision reports indicate injury collisions only if reported at the scene of the collision and no further distinction is made regarding injury type like shown above. Cost estimates for this analysis assumes that all injury types fall under the category of "Non-incapacity evident injury".

Table A5-2 shows the economic costs in collisions using these cost estimates for the years 2010 through 2014.

Table A5-2: City of Eureka Comprehensive Costs, 2010-2014 Traffic Collisions

Year	Collision Type						
	Fatal		Non-incapacitating Injury		Property Damage Only		Total Dollar Loss
	Number	Cost	Number	Cost	Number	Cost	
2010	2	\$9,076,000	257	\$15,085,900	568	\$1,420,000	\$25,581,900
2011	4	\$18,152,000	246	\$14,440,200	576	\$1,440,000	\$34,032,200
2012	4	\$18,152,000	283	\$16,612,100	560	\$1,400,000	\$36,164,100
2013	4	\$18,152,000	252	\$14,792,400	535	\$1,337,500	\$34,281,900
2014	3	\$13,614,000	243	\$14,264,100	471	\$1,177,500	\$29,055,600

While it is difficult to assign a numerical value to a potential life changing event like a severe collision involving an incapacitating injury or death, the tables above show the economic and societal costs associated with these types of collisions in Eureka. Not shown in the data are the human costs; the loss of the ability to continue life as before the incident (for both the victim and the party at fault), the loss of a child, the loss of a brother or sister, the loss of a mate, or the loss of a dear friend. When these incidents occur, life is changed beyond numerical value.

	TRAFFIC SAFETY PROJECTS LIST						Aggressive Driving	Distracted Driving	Impaired Driving	Non-motorized Users	Quality of Life
	Location	Description	Date	Intended Benefit	Funding Source	Result					
COMPLETED PROJECTS											
CITY/COUNTY	Harrison Avenue	In-roadway pedestrian sign	2012	Pedestrian safety	Shared cost	Alternative sought due to need for too frequent replacement					
CITY/COUNTY	Allard Avenue	SR2S sidewalk infill	2013	Pedestrian safety	Local gas tax	Joint effort allowed for overall cost reduction					
CITY/HBBCA	Downtown/Old Town	Bike rack installations	On-going	Increase cycling	City crews	Increased bike parking					
CITY/CALTRANS	Broadway at Wabash	Temporary road closure	2013	Data collection & analysis	Caltrans	TBD Possible permanent road closure & signal installation at Broadway & Hawthorne					
CITY/CALTRANS	Broadway at 5th St	Rumble-type bumps	2013	Lane delineation, (parked car) collision reduction	Caltrans	Sound not excessive, crash reduction					
CITY	Fairway Drive	Guardrail installation	2013	Reduce run-off-the-road collisions	Gas tax	Collision reduction					
CITY	Campton Road	Guardrail installation	2010	Reduce run-off-the-road collisions	HSIP federal grant	Injury collision reduction					
CITY	Harris at Dolbeer	Pedestrian activated signs, beacons	2010	Pedestrian safety	Prop 1B	Positive feedback					
CITY	Harris at Dolbeer	Median striping & channelizers	2009	Reduce right angle collisions	ARRA funding	Injury collision reduction					
CITY	All signalized intersections	Increase signals to 12"	2013	Reduce red light running	Prop 1B	Collision reduction					
CITY	H & I Street Corridor	New school zone crosswalks & FYG signage & markings	2013	Pedestrian safety	Staff budget	Positive feedback					
CITY	H & I Street Corridor	Fog line striping	2013	Reduce parked car collisions	Gas tax (surfacing project)	Positive feedback, increased on-street parking use, collision reduction TBD					
CITY	H & I Street Corridor	Install 35 mph signs	2013	Increase number of radar speed sign locations	City crews	Positive feedback					
CITY	Harris at E, F, & S Sts	Protected left turn signals	2013	Reduce right angle collisions	HSIP federal grant	Injury collision reduction					
CITY	Myrtle & 6th	Pedestrian refuges & lighted signs and beacons	2009	Pedestrian & motorist safety	Caltrans	Injury collision reduction & positive pedestrian feedback					
CITY	Myrtle & 7th	Pedestrian refuges	2008	Pedestrian & motorist safety	STIP	Positive pedestrian feedback					
CITY	Harris Street	Striped bike lanes, lane width reduction	2011	Traffic calming & BL	ARRA & Gas tax	No speed reduction, positive cyclist feedback					
CITY	Harris at E and F	Audible pedestrian signals	2013	Pedestrian safety	Prop 1B	Positive vision impaired pedestrian feedback					
CITY	14th & F Sts	Larger STOP signs	2012	Reduce right angle collisions	City crews	Collision reduction					
CITY	Dolbeer & W Sts	Raised crosswalks	2010	Pedestrian safety & traffic calming	SR2S State funds	Reduced speeds, positive pedestrian feedback					
CITY	W Street at zoo	In-pavement lights	2008	Pedestrian safety	Gas tax	Improved motorist yielding to pedestrians					
CITY	West Ave at Tydd	In-pavement lights	2008	Pedestrian safety	Gas tax	No motorist yielding improvement, system being replaced & median installed					
CITY	Harris at K St	In-pavement lights	2010	Pedestrian safety	Prop 1B	Positive pedestrian feedback					
CITY	Henderson & Spring	Pedestrian activated signs, beacons	2011	Pedestrian safety	Prop 1B	Positive pedestrian feedback					
CITY	S Street at Zane	Pedestrian activated signs, beacons	2008	Pedestrian safety	Gas tax	Improved motorist yielding to pedestrians					
CITY	Various	Increased red zone at intersections & driveways	On going	Pedestrian & motorist safety	City crews	Improved sight visibility					
CITY	EHS J Street	Increased passenger loading zone	2013	Reduce double parking	City crews	Improve congestion					
CITY	Harris & Central	New signal	2011	Reduce collisions, pedestrian safety	Prop 1B	No overall improvement, positive feedback					
CITY	Harris & Harrison	New LT pockets	2012	Reduce collisions, signal coordination	Prop 1B	Collision reduction					
CITY	Wabash & E Sts	Install crosswalk markings	2013	Pedestrian safety	City crews	Positive feedback					
CITY	Fairway Drive	Install curve warning sign	2012	Reduce collisions	City crews	Radar speed sign installed, collision reduction					



	TRAFFIC SAFETY PROJECTS LIST						Aggressive Driving	Distracted Driving	Impaired Driving	Non-motorized Users	Quality of Life
	Location	Description	Date	Intended Benefit	Funding Source	Result					
CITY	East Avenue	Install 15 mph signs	2012	Traffic calming	City crews	Positive feedback					
CITY	Truesdale at Broadway	Relocated "LT Only" sign & arrow	2012	Motorist safety	City crews	Collision reduction, improved enforcement					
CITY	2nd & C Streets	Install 4-way stop	2011	Motorist safety	City crews	Collision reduction, less driver confusion					
CITY	6th Street at C St	Install 25 mph signs	2011	Traffic calming	City crews	Positive feedback					
CITY	CA between Del Norte & Sonoma	Install "Senior Citizen Facility" & pedestrian signs	2010	Pedestrian safety	City crews	Positive feedback					
CITY	2nd Street at I St	Install 25 legend	2010	Traffic calming	City crews	Positive feedback					
CITY	Dolbeer n/o Harris	Install 25 legends	2009	Traffic calming	City crews	Positive feedback					
CITY	14th w/o H St	Reduced speed limit to 25 mph	2009	Aid speeding enforcement	Staff budget						
CITY	School zones	Replace crosswalk signs with FYG signs	2011	Pedestrian safety	Prop 1B	Positive feedback					
CITY	City-wide	DUI checkpoints	On-going	Reduce impaired driving	OTS grant	DUI arrests					
CITY	City-wide	Overtime traffic enforcement	On-going	Reduce distracted driving, red light running, high incident location collisions	OTS grant	Increased police presence, tickets					
CITY	West Avenue	Median and bulb-outs	2014	Pedestrian safety	HSIP federal grant	TBD					
CITY	All signalized intersections	Emergency Vehicle Prevention Equip	2014	Emergency response, motorist safety	HSIP federal grant	TBD, positive feedback					
CITY	All signalized intersections	Countdown pedestrian signals & ADA push buttons	2015	Pedestrian safety	HSIP federal grant	TBD					
CITY	All signalized intersections	Red light running fine signs	2014	Reduce red light running	EPD	TBD					
CITY	Signal retiming	Optimize signal software & hardware	2015	Imp traffic flows, pedestrian safety	Staff time	TBD					
CITY	Dolbeer at WA Elementary School	Replace & relocate sidewalk	2014	Pedestrian safety	TE funds	Positive feedback					
CITY	B, Buhne, California, Campton, Dolbeer, E, Glen, H, Harrison, I, M, Myrtle, 7 <sup>th</sup> and Union Streets	Posted speed limits reduced by 5 mph	2015	Updated Engineering and Traffic Survey allows for continued use of radar for speed enforcement	Staff time	Slower traffic resulting from traffic improvements and enforcement to date					
CITY	City-wide	Pedestrian Safety Campaign	2015	Pedestrian safety	OTS grant application	TBD					
FUTURE PROJECTS											
CITY/CALTRANS	Broadway	Adaptive signal control	2015/16	Reduce congestion	Non-freeway funds						
CITY/CALTRANS	South End Broadway	South Gateway	TBD	Traffic calming & pedestrian safety	TBD						
CALTRANS	Broadway	Broadway Feasibility Study	TBD	Safety, operation, mobility improvements	TBD						
CALTRANS	4th & 5th Sts	Pedestrian Safety Study	TBD	Pedestrian safety	TBD						

		LEVEL I				LEVEL II										LEVEL III													
Neighborhood Concern	Performance Objective	Education	Police Presence	Radar Speed Feedback Signs	Police Enforcement	Speed Limit Signs	Speed Limit Pavement Legends	Parking Prohibition	Warning Signs	Neighborhood Signs	High Visibility Crosswalk Markings	Street Lighting	Street Trees	Flashing Beacons	Pedestrian Activated Signs/Lights	Gateway/Entry Treatments	Turn Restrictions	Speed Humps	Raised Crosswalk	Bulb-out	Median	Chicanes	Half Street Closure (one way)	Full Street Closure	Striping / Markings	Traffic Circles	Roundabouts		
Speeding																													
	Reduce speeding	P	•	•	•	•	•		•	•			•					•	•	•	•	•	•	•	•	•	•		
Collisions																													
	Reduce motorist collisions	•	•	P	•			•	•			•		•									•	•	•	•	•		
	Reduce pedestrian collisions	•	•		•			•	•		•	•	•	•	•	P	•		•	•	•					•	•		
	Reduce bicyclist collisions	•	•		•				•	•		•				P							•	•	•	•	•		
Pedestrian Safety																													
	Shorten street crossing distance															P			•	•	•				P		P		
	Improve motorist yielding behavior	•	•		•				•	•	•	•		•	•	P			•	•	•				P	P	P		
	Improve visibility								•		•	•			•	P			•	•	•				P		P		
Bicycle Safety																													
	Improve bike facility															P					P		•	•	•		P		
	Improve motorist yielding behavior	•	•		•				•	•						P									•		P		
Traffic Volumes																													
	Reduce cut-through traffic					•	•			•							•	•	•	P	P	•	•	•	P	•			
Quality of Life/Esthetics																													
	Beautification									P		P	•			•				P	P	P	P	P		•	P		
	Increase property values											P	•			•							P	P		P			
On-street Parking																													
	Reduce parked car collisions		P		P			•													P		P		•				
\$ = Less than \$5,000 \$\$ = \$5,000-\$10,000 \$\$\$ = \$10,000-\$50,000  P = Possible																													
	Cost Range	\$	N/A	N/A	N/A	\$	\$	\$	\$	\$	\$	\$	N/A	\$\$	\$\$	\$\$-\$ \$\$\$	\$	\$\$	\$\$	\$\$	\$\$	\$\$-\$ \$\$\$	\$\$	\$\$	\$\$	\$-\$	\$\$\$	\$\$\$	
	Local Street	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			
	Collector Street	•	•	•	•	•	•	•	•		•	•	•	•	•										•		•		
	Arterial Street	•	•	•	•	•	•	•	•		•	•	•	•											•		•		
	NTCP Page No.	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		

TRAFFIC CALMING TOOLBOX MATRIX